

REMARKS

Claims 1-31 are pending and were rejected. Claims 1-2, 9-11, 16-18, and 24-26 have been amended.

The Examiner is thanked for withdrawing the prior objection to claim 22.

On December 19, 2003, Applicants' counsel conferred by telephone with the Examiner. The Examiner suggested deleting the phrase "a wavelength other than a wavelength of the signal" and similar restrictions from the claims in which they appeared. Applicants' counsel agreed with the Examiner's suggested amendments. Subsequently, Applicants received the Final Rejection, which was mailed on December 18, 2003, the day before the conference with the Examiner. At the time Applicants' counsel reasonably believed a Notice of Allowance was forthcoming, based on the subsequent conversation with the Examiner on December 19, 2003. When no Notice of Allowance was received, Applicants' counsel again conferred with the Examiner by telephone on January 15, 2004. The Examiner advised Applicants' counsel that the Examiner had intended to enter the suggested amendments and issue a Notice of Allowance, but, after conferring with the Primary Examiner, had instead decided not to enter the suggested amendments or issue a Notice of Allowance. The Examiner advised Applicants' counsel to respond to the Final Office Action. Under these circumstances, Applicants respectfully request that the finality of the December 18, 2003, Office Action be withdrawn.

Turning to the merits, the Examiner rejected claims 1-3, 9-11, 16-18 and 24-26 under 35 U.S.C. § 112, first paragraph, for failing to comply with the written description requirement. Specifically, the Examiner contended there was no support in the specification for the language "having a length other than a wavelength of the interrogation signal." Applicants respectfully traverse the Examiner's contention that this language is not supported by the specification. For example, the specification on page 5, lines 20-21 recites "The phase modulator 44 includes a switch 46 coupled between the antenna 42 and a partial-wavelength stub 48." The specification also contains specific example lengths of stubs having a wavelength other than a wavelength of the interrogation signal. See page 5 at lines 24-26 and page 8, lines 5-6. In addition, claims 9, 16 and 24 as originally filed recite "a stub having a length other than a

wavelength of the interrogation signal.” The claims form part of the specification for purposes of Section 112. Nevertheless, Applicants have deleted the “other than a wavelength” language in the claims. Applicants respectfully submit that the claims, as amended, are supported by the specification, and that the amendments, rather than narrowing the claims, broaden the claims.

The Examiner next rejected claims 1-7, 10-12, 14, 17-22 and 25-30 under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,247,305 (“Hirata”) in view of U.S. Patent No. 5,119,099 (“Haruyama”). As an initial matter, Applicants respectfully submit that Hirata is not an appropriate primary reference with regard to claims 1-7, 10-12, 14, 17-22 and 25-30.

Independent claim 1 recites a “transponder...configured to return a backscatter response of a substantially constant power level.” Independent claims 4, 7, 10, 12, 14, 17, 20, 25, 27, 28, 29, 30 and 31 recite “a response signal having a substantially constant power level” or a similar limitation. Hirata discloses a transponder producing a backscatter response with two different phase states. The power level for the two states, however, is not substantially constant. In remarks accompanying the rejection, the Examiner cites several passages in Hirata. These passages and the embodiments of Hirata, however, actually demonstrate that Hirata contemplates two different power levels for the response signal. Even if Hirata is read as disclosing that it would be desirable to produce a two-phase backscatter response signal having a substantially constant power level (which it does not), Hirata does not suggest that it is possible to generate such a response, let alone disclose an embodiment configured to generate such a response signal or suggest that a way to do so is known in the art.

The Examiner first points to column 5, lines 41-50, where Hirata discloses a phase-modulator C1 designed “for changing a signal phase between 90° and -90°.” The cited passage does not indicate or suggest that the two phases have substantially the same power level. The modulator C1 of Hirata is controlled by applying an identification signal to a variable capacitance diode, which varies the impedance of the diode. See Column 4 at 53-57. Hirata goes on to note that “The loss in the modulator C1 increases as the conductance of the modulator C1 increases. In addition, the ratio of an electric power radiated from the antenna B1 to an electric power received by the antenna B1 increases as the susceptance of the modulator C1 increases.” The Examiner concludes from the cited text that Hirata “is only changing the phase

but not an amplitude.” But this is not stated or suggested in the cited portion of Hirata. In fact, Hirata discloses a transponder where the power level of the two phase states is different. This is perhaps best illustrated by Figure 16, which is a Smith chart, and the accompanying description at Column 14, lines 7-41. In one state, 67-72% of the radio waves are reflected. In the other state, approximately all of the radio waves are absorbed by the rectifying circuitry.

The Examiner also points to column 6, line 47 to column 7, line 28. The cited portion of Hirata does not disclose that the power level of the reflected signal remains substantially constant. In fact, the described circuit (illustrated in Figure 5) has two states: one state bypasses the diode that rectifies the power and the other state does not bypass the diode that rectifies the power. This results in different reflected power levels for the two states of operation. The Examiner also points to Figure 1 and the description at Column 3, line 45 to Column 4, line 3. Again, the cited portion does not state that the power level of the reflected signal is substantially constant. Figure 1 is a conceptual drawing, and does not provide details from which it is possible to determine the power levels that would be produced by the two operational states. The detailed drawings (*i.e.*, Figure 5) clearly show embodiments that operate in two power states. The Examiner also suggests that “a substantially constant power level” is disclosed at column 7, lines 38-40 and at column 9, line 58 to column 10, line 7. The cited portions of Hirata, however, make no reference to transmitting a response with “a substantially constant power level.”

The Examiner asserts that a backscatter response having a substantially constant power level is disclosed by Haruyama, citing Figure 5 and column 4, lines 6-19, as well as Figure 9 and column 1, lines 38-62. Haruyama is a completely different system that is directed to sending a harmonic response signal. Thus, Applicants submit one of skill in the art would not be motivated to combine Haruyama with Hirata. In any event, it is clear that the circuit of Figure 5 generates a response signal with two power levels that are not substantially the same. In one state “the harmonic component is more strongly generated”; in the other state “no harmonic component is generated.” Col. 5, lines 21-31. With regard to Figure 9, in one state the transistor 3 is off. In the other state the transistor 3 is on. The voltage drop across the transistor 3 of

Figure 9 will result in a significant power loss when the transistor is on. Thus, Figure 9 clearly generates a response signal with two power levels that are not substantially the same.

The Examiner also states that one of skill in the art would have been motivated to create a transponder that produced a backscatter response with a substantially constant power level, and, when choosing between Hirata and Haruyama, would have selected the phase modulation of Hirata because of its greater bandwidth efficiency. The problem with this argument, however, is that neither Hirata nor Haruyama disclose a transponder configured to product a backscatter response with a substantially constant power level. Thus combining the two references and selecting the phase-modulation scheme of Hirata would not result in the claimed invention. In fact, Hirata and Haruyama both teach away from the claimed invention because all of the embodiments disclosed by Hirata and Haruyama are designed to produce a backscatter response with two different power levels.

In addition, Applicants respectfully submit that what might be considered obvious in a conventional transmission system costing perhaps thousands of dollars and containing expensive and power-hungry components such as circulators, would not be obvious in a transponder, where size, cost and power consumption considerations dominate. Applicants further note that all of the embodiments in Hirata and Haruyama transmit a binary response signal at two distinct power levels, which is further support for the non-obviousness of the claims.

Accordingly, Applicants respectfully submit that claims 1-7, 10-12, 14, 17-22 and 25-30 are not rendered obvious by the combination of Hirata and Haruyama.

In addition, independent claim 1 recites "a phase modulator comprising: a switch having ... first and second conduction terminals, the first conduction terminal coupled to the antenna; a stub coupled to the second conduction terminal of the switch." Independent claims 10, 17 and 25, while not identical in language or scope, contain a similar limitation. Claims 2-3 depend from claim 1, claim 11 depends from claim 10, claims 18 and 19 depend from claim 17, and claim 26 depends from claim 25. The Examiner concedes that Hirata does not disclose a stub coupled to a conduction terminal of the claimed switch, but argues that Hirata discloses a stub coupled to a conduction terminal of a switch in a power rectification circuit and that

Haruyama discloses a stub coupled to a switch in order to shift the phase of the response. As noted above, Applicants submit that one of skill in the art would not be motivated to combine Haruyama with Hirata because Haruyama is directed to generating a harmonic response signal. Accordingly, Applicants respectfully submit that claims 1-3, 10-11, 17-19 and 25-26 are allowable for the additional reason that Hirata in combination with Haruyama does not teach or suggest the claimed stub.

Independent claim 4 recites "a phase modulator having a diode, a first terminal of the diode coupled to the antenna and a driver coupled between the memory and a second terminal of the diode." Independent claims 6, 12, 20, 22 and 27, while not identical in language or scope, contain similar limitations. Claim 5 depends from claim 4, and claim 21 depends from claim 20. The Examiner points alternately to diode 53 of Figure 4 and to diode 63 of Figure 5 as the claimed diode, to the microprocessor 1130 of Figure 17 as the claimed driver, and to ram 1140 of Figure 17 as the claimed memory. Applicants previously argued that diode 53 is coupled directly to the memory, thus there is no driver between the memory and diode 53 as claimed. Applicants also argued that, with respect to diode 63, the same terminal of the diode that is coupled to the antenna is coupled to the driver, thus diode 63 cannot be the claimed diode. The Examiner has not responded to these arguments, other than to make a conclusory statement that it would have been obvious to so configure a diode as claimed in Figure 17. The Examiner does not point to a specific diode in Figure 17 or to any place in Hirata or Haruyama disclosing or suggesting the claimed diode. The Examiner also points to Column 9, line 58 to Column 10, line 7, which discusses diode 96 and the T-Network of Figure 9. The discussion makes it clear that the antenna is coupled to the diode 96 via terminal 91, which is coupled to the same terminal of the diode as the T-Network of Figure 9. Thus, diode 96 cannot be the claimed diode. Accordingly, Applicants respectfully submit that claims 4-6, 12-13, 20-22 and 27 are not rendered obvious over Hirata in view of Haruyama for the additional reason that Hirata in combination with Haruyama does not teach or suggest the claimed diode.

The Examiner rejected claims 8-9, 15-16, 23-24 and 31 under 35 U.S.C. § 103(a) as obvious over Hirata in view of Haruyama or alternatively in view of U.S. Patent No. 3,656,069 ("Beccone"). Claims 8 and 9 depend from claim 7 and claims 15-16 depend from

claim 14. As an initial matter, Applicants submit that Hirata is not an appropriate primary reference. Applicants further submit that one of skill in the art would not be motivated to combine Beccone, which is directed to a transmitter system involving high-power combinations and components such as circulators, with Hirata, which is directed to small, passive transponders. In any event, claim 7 recites a "transponder, comprising: ... a phase modulator structured to produce a response signal having a substantially constant power level." Independent claims 14, 23 and 31 contain similar limitations. As discussed above, the combination of Hirata and Haruyama does not teach or suggest a transponder having a phase modulator structured to produce a response signal having a substantially constant power level. The Examiner does not contend that this teaching is supplied by Beccone. Claim 24 depends from claim 23. Accordingly, Applicants submit that claims 8-9, 15-16, 23-24 and 31 are not rendered obvious by Hirata in view of Haruyama or in view of Beccone.

The Examiner rejected claim 13 under 35 U.S.C. § 103(a) as obvious over Hirata in view of U.S. Patent No. 4,918,749 ("Entschladen"). Claim 13 recites "a transponder to return a phase-modulated response signal having a substantially constant power level." Applicants again submit that Hirata is not an appropriate primary reference because it does not disclose a transponder to return a phase-modulated response signal having a substantially constant power level, as recited. The Examiner does not contend that this teaching is supplied by Entschladen. Applicants further submit that Entschladen, like Beccone, is not an appropriate secondary reference because it is directed to general transmitters and not to backscatter transponders. Thus, Applicants submit that claim 13 is not rendered obvious by the combination of Hirata and Entschladen.

In addition, claim 13 recites "a first diode having an anode and a cathode, the cathode of the first diode coupled to the antenna; a second diode having an anode and a cathode, the anode of the second diode coupled to the antenna." The Examiner concedes that Hirata does not disclose such a configuration. The Examiner contends Entschladen supplies the missing teaching because it happens to show two diodes, one with its anode connected to an antenna and the other with its cathode connected to the antenna, and that one of skill in the art would have been motivated to combine this teaching with diodes 173 of Figures 15 and 20 and diode 73 of

Figure 6 of Hirata. Applicants previously argued that one would not be motivated to combine Entschladen with Hirata in this fashion because if one of the diodes of Hirata were reversed, the circuit would not function as intended. In response, the Examiner does not address whether Hirata would function properly if so modified. Instead, the Examiner makes a blanket statement that it would have been obvious "to recognize an alternative way to connect the cathode of the first diode to an antenna of Entschladen." See Page 10 of the Final Office Action. The Examiner does not explain what alternative way Entschladen would be configured and does not explain how configuring Entschladen in such a manner would result in the claimed invention. It would not because Entschladen is not a transponder. Accordingly, Applicants respectfully submit that claim 13 is not rendered obvious over Hirata in view of Entschladen for the additional reason that the combination of Hirata with Entschladen does not teach or suggest the claimed first and second diodes.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

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